

UNITED STATES DEPARTMENT OF AGRICULTURE  
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

1. CERTIFICATE NUMBER: 34-R-0001  
CUSTOMER NUMBER: 109

FORM APPROVED  
OMB NO. 0579-0036

ANNUAL REPORT OF RESEARCH FACILITY  
( TYPE OR PRINT )

University Of Michigan  
1301 Catherine Street  
018 Animal Research Facility  
Ann Arbor, MI 48109

Telephone: (734) -763-8028

3. REPORTING FACILITY ( List all locations where animals were housed or used in actual research, testing, or experimentation, or held for these purposes. Attach additional sheets if necessary )

FACILITY LOCATIONS ( Sites ) - See Attached Listing

REPORT OF ANIMALS USED BY OR UNDER CONTROL OF RESEARCH FACILITY ( Attach additional sheets if necessary or use APHIS Form 7023A )

A. Animals Covered By The Animal Welfare Regulations	B. Number of animal being bred, conditioned, or held for use in teaching, testing, experiments, research, or surgery but not yet used for such purposes.	C. Number of animals upon which teaching, research, experiments, or tests were conducted involving no pain, distress, or use of pain-relieving drugs.	D. Number of animals upon which experiments, teaching, research, surgery, or tests were conducted involving accompanying pain or distress to the animals an for which appropriate anesthetic, analgesic, or tranquilizing drugs were used.	E. Number of animals upon which teaching, experiments, research, surgery or tests were conducted involving accompanying pain or distress to the animals and for wh the use of appropriate anesthetic, analgesic, or tranquiliz drugs would have adversely affected the procedures, res or interpretation of the teaching, research, experiments, surgery, or tests. ( An explanation of the procedures producing pain or distress in these animals and the reas such drugs were not used must be attached to this report	F. TOTAL NUMBER OF ANIMALS  ( COLUMNS C + D + E )
4. Dogs			297		297
5. Cats		6	17		23
6. Guinea Pigs		229	711	69	1009
7. Hamsters					
8. Rabbits		268	318		586
9. Non-human Primates		218	49	42	309
10. Sheep		122	182	42	346
11. Pigs			249		249
12. Other Farm Animals					
Cows			11		11
13. Other Animals					
Degus		136	135		271
Voies-Brarie		32			32

ASSURANCE STATEMENTS

- 1) Professionally acceptable standards governing the care, treatment, and use of animals, including appropriate use of anesthetic, analgesic, and tranquilizing drugs, prior to, during, and following actual rese teaching, testing, surgery, or experimentation were followed by this research facility.
- 2) Each principal investigator has considered alternatives to painful procedures.
- 3) This facility is adhering to the standards and regulations under the Act, and it has required that exceptions to the standards and regulations be specified and explained by the principal investigator and ap Institutional Animal Care and Use Committee (IACUC). A summary of all such exceptions is attached to this annual report. In addition to identifying the IACUC-approved exceptions, this summary in brief explanation of the exceptions, as well as the species and number of animals affected.
- 4) The attending veterinarian for this research facility has appropriate authority to ensure the provision of adequate veterinary care and to oversee the adequacy of other aspects of animal care and use.

CERTIFICATION BY HEADQUARTERS RESEARCH FACILITY OFFICIAL  
( Chief Executive Officer or Legally Responsible Institutional Official )

SIGNATURE

(b)(6), (6)(7)(C)

NAME & TITLE OF C.E.O. OR INSTITUTIONAL OFFICIAL ( Type or Print )

(b)(6), (6)(7)(C)

DATE SIGNED

11-25-08

FORM APPROVED  
OMB NO. 0579-0038

2. HEADQUARTERS RESEARCH FACILITY (Name and Address, as registered with USDA, include Zip Code)

[illegible]

- 1) Professionally acceptable standards governing the care, treatment, and use of animals, including appropriate use of anesthetic, analgesic, and tranquilizing drugs, prior to, during, and following actual research, teaching, testing, surgery, or experimentation were followed by this research facility.
- 2) Each principal investigator has considered alternatives to painful procedures.
- 3) This facility is adhering to the standards and regulations under the Act, and it has required that exceptions to the standards and regulations be specified and explained by the principal investigator and approved by the Institutional Animal Care and Use Committee (IACUC). A summary of all the exceptions is attached to this annual report. In addition to identifying the IACUC-approved exceptions, this summary includes a brief explanation of the exceptions, as well as the species and number of animals affected.
- 4) The attending veterinarian for this research facility has appropriate authority to ensure the provision of adequate veterinary care and to oversee the adequacy of other aspects of animal care and use.

## DATE SIGNED

(b)(6), (6)(7)(C)

11/25/08

3/etn

**PART 1 - HEADQUARTERS**

## Column E Explanation

1. Registration Number: 34-R-0001
2. Number of animals used in this study: 41
3. Species (common name) of animals used in this study: Guinea Pigs
4. Explanation of procedure producing pain and/or distress.

The procedure involved placing the animals in a cage that is placed in a sound booth, with adequate ventilation for 2 to 4 hours. A speaker on top of the booth then emits a sound or noise at a level high enough to cause hearing loss.

5. Scientific justification why pain or distress could not be relieved. Methods or means used to determine that pain or distress relief would interfere with test results.

We study the effect of noise over-exposure on the auditory epithelium and on the hearing of mammals the animals. We perform these studies in order to design ways to prevent deafness due to overstimulation and to develop ways to regenerate tissue and hearing in ears where damage was done due to noise exposure. We use a noise exposure which needs to result in hair cell loss and to mimic conditions that affect people. The noise exposure we use is similar to conditions people experience. These conditions are prevalent in military situations and in several professions such as construction, road work, and even playing in the symphony, let alone night clubs or disco dance floors. People actually elect to experience similar (or worse) conditions in some bars, discos and amplified music in concerts or via headphones, and often in cars. While people do not find these stressful, we prefer to err on the conservative side and consider these as stressful to the animals. Still, animals do not seem to be bothered by the exposure so perhaps the stress is minimal. We cannot use sleep medication because animals sleep on their side such that one ear is covered, depriving us from the ability to have a model with symmetrical lesions.

## Column E Explanation

1. Registration Number: 34-R-0001
2. Number of animals used in this study: 22
3. Species (common name) of animals used in this study: Guinea Pigs
4. Explanation of procedure producing pain and/or distress.

**Animals are placed in a harness, which allows the animal free access to a water bottle, but prevents it from twisting or shearing off the connector attached to its implant. This is conducted for 2-4 hours a day, 5 days a week.**

5. Scientific justification why pain or distress could not be relieved. Methods or means used to determine that pain or distress relief would interfere with test results.

**When measuring psychophysical responses to presented stimuli, it is essential for the animal to remain focused and facing forward in the test cage under the speaker and near the food reward tray. Animals are only restrained for as long as they are willing to perform the positive - reinforcement psychophysical task; once they have eaten their fill of reward pellets they are removed from the restraint device. These measurements could not be made under chemical restraint as a physical response is required from the animal to signal perception.**

## Column E Explanation

1. Registration Number: 34-R-0001
2. Number of animals used in this study: 6
3. Species (common name) of animals used in this study: Guinea Pigs
4. Explanation of procedure producing pain and/or distress.

**Animals must be restrained for vestibular testing for up to 3 hours. The animals are placed in a custom box that prevents them from easily climbing out and the head is restrained in a head holder.**

5. Scientific justification why pain or distress could not be relieved. Methods or means used to determine that pain or distress relief would interfere with test results.

**Investigator measures the vestibulo-ocular reflex (VOR). Our data are based on delivering precisely controlled accelerations to the vestibular receptors located in the inner ear. Both the temporal and spatial pattern of the motion stimulus is important; thus, head position must be restrained.**

## Column E Explanation

1. Registration Number: 34-R-0001
2. Number of animals used in this study: 42
3. Species (common name) of animals used in this study: Macaque monkeys
4. Explanation of procedure producing pain and/or distress.

Macaque monkeys are used in an antinociception assay. The main aim of this study is to test compounds (i.e., analgesics) and their ability to produce analgesia. The procedure involves exposure of the monkey's tail to water of temperatures ranging from 40-55° C for a period of not more than 20 seconds. A localized compound is administered to the tail. The measure of antinociception is the latency for animals to withdraw their tails from the warm water. Either the animal or the experimenter will remove the tail at/or before the 20-second mark.

5. Scientific justification why pain or distress could not be relieved. Methods or means used to determine that pain or distress relief would interfere with test results.

If standard analgesic drugs were administered, the ability of the laboratory to interpret data from the test compounds would be impossible.

## Column E Explanation

1. Registration Number: 34-R-0001
2. Number of animals used in this study: 7
3. Species (common name) of animals used in this study: Sheep
4. Explanation of procedure producing pain and/or distress:

**The sheep are in column E due to the prolonged restraint. They are housed in a stanchion for up to 30 days. The animals do not appear to display any signs of discomfort and pain.**

5. Scientific justification why pain or distress could not be relieved. Methods or means used to determine that pain or distress relief would interfere with test results.

**The animal will be connected to peritoneal catheters connected to the perfusion machine. Experience has shown that the animals can entangle their legs within these lines and tubes or gain access and chew or eat these lines. The harness will prevent the animal from turning 180 degrees within the enclosure but will allow the animal to stand and lie down freely. The animal will have continuous access to food and water. The sheep appear content over the course of the therapy session. The scientific justification of the need for the restraint is that the sheep would most likely pull at the catheters that have been placed for therapy delivery and could potentially cause them to come out. This could cause much more pain and discomfort to the sheep due to potential infection at the insertion site.**

## Column E Explanation

1. Registration Number: 34-R-0001
2. Number of animals used in this study: 19
3. Species (common name) of animals used in this study: Sheep
4. Explanation of procedure producing pain and/or distress.

**The sheep are in column E due to the prolonged restraint. They are housed in a stanchion for up to 30 days.**

5. Scientific justification why pain or distress could not be relieved. Methods or means used to determine that pain or distress relief would interfere with test results.

**The animal will be connected to an artificial lung and numerous lines for monitoring, infusion of intravenous fluids and medications, and oxygen sweep gas flow. Experience has shown that the animals can entangle their legs within these lines and tubes or gain access and chew or eat these lines. The harness will prevent the animal from turning 180 degrees within the enclosure but will allow the animal to stand and lie down freely. The animal will have continuous access to food and water.**

## Column E Explanation

1. Registration Number: 34-R-0001
2. Number of animals used in this study: 16
3. Species (common name) of animals used in this study: Sheep
4. Explanation of procedure producing pain and/or distress.

We plan to study the effects of psychological stress on the estrous cycle of female sheep that are undernourished. The food reduction will be targeted to produce a gradual loss of body weight. Food restriction will initial be a 20% reduction for the first month followed by a furgther decrease by 10-15% if necessary to achieve target body weight of 75-80% of the starting body weight over the course of 3-4 months. This targeted weight will be maintained for an additional 2 months while the experiments are being performed.

5. Scientific justification why pain or distress could not be relieved. Methods or means used to determine that pain or distress relief would interfere with test results.

The animals that are placed in this category are being used to test the hypothesis that psychosocial stress disrupts the estrous cycle of sheep that are nutritionally compromised. During the year, we have been preparing the animals by reducing their food intake, but we did not yet begin the psychosocial stress. The distress of food reduction is essential for the goal of this experiment.

**Annual Report of Research Facility  
University of Michigan**

**List of Exceptions to the Regulations**

1. Registration Number: 34-R-0001  
Customer Number: 109
  
2. University of Michigan  
1301 Catherine Street  
Ann Arbor, MI 48109-5614  
(734) 763-8028

Species Name	Exception to Regulation	Rationale
Cat	House individually	Adult male intact cats are territorial and socially incompatible. Their behavior could cause damage to their surgical implants.
Cat	Constant light cycle	Animals are used in sleep studies. Constant light in housing room ensures animals will sleep when tested in the dark laboratory
Degu	House in same room with rats	Facility space limitations
Degu	House in same room with mice	Facility space limitations
Degu	Constant light cycle	Study psychological effects of constant light
Degu	Constant dark cycle	Study psychological effects of constant darkness
Guinea Pig	House in same room with rats	Facility space limitations
Guinea Pig	House in same room with rats and mice	Facility space limitations
Pig	House in same room with sheep	Facility space limitations
Sheep	Housed in 36" x 24" pen for up to 28 days	Animals must be prevented from turning around and damaging catheters/tubing
Sheep	House in same room with pigs	Facility space limitations